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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,080	01/28/2002	Shin-ichirou Harasawa	1095.1208	2249
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STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER SINGH, DALZID E	
			ART UNIT 2633	PAPER NUMBER

DATE MAILED: 08/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/056,080

Applicant(s)

HARASAWA, SHIN-ICHIROU

Examiner

Dalzid Singh

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-22 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3,4,7,9,12,15-22 and 24-30 is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,10,11,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 25 May 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “optical repeater comprising: ... a tone signal generation unit...” as recited in claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10, 11, 13 and 14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 recites, "An optical repeater comprising: ... a tone signal generation unit..." Fig. 1 of the disclosure, as originally filled, shows tone-signal generating unit (12) is located at the optical terminal (10) and not at the optical repeater (20). It is unclear how the tone-signal generation unit is provided at the optical repeater.

Therefore, claim 10 is indefinite for failing to particularly point out and distinctly claim the subject matter.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terahara (US Patent No. 6,271,945) in view of Bode et al (US Patent No. 6,212,001).

Regarding claim 1, Terahara discloses an optical transmission system (fig. 17) comprising:

an optical terminal (98, fig. 17);

an optical fiber transmission line (102A, fig. 17) connected to the optical terminal (98, fig. 17); and

an optical repeater (106, fig. 17) arranged along the optical-fiber transmission line (102A, fig. 17);

the optical terminal includes, an optical-signal power detection unit (86, fig. 13) which detects power of optical signals (ch. 1...ch.m, fig. 13) transmitted from the optical terminal in each of a plurality of gain bands (col. 12, lines 26-33);

a tone-signal generation unit (88, fig. 13) which generates a plurality of tone signals ( $f_1 \dots f_m$ , fig. 13 and col. 11, lines 49-53) respectively corresponding to the plurality of gain bands ( $\lambda_1 \dots \lambda_m$ , fig. 13), where each of the plurality of tone signals has a different frequency ( $f_1, \dots, f_m$ , fig. 13) and a characteristic corresponding to the power of optical signals in one of the plurality of gain bands corresponding to the each of the plurality of tone signals (col. 12, lines 20-25);

wherein the characteristic of each of the plurality of tone signals is the frequency of the each of the plurality of tone signals or modulation depth with which the each of the plurality of tone signals is modulated (since the tone signal composed of a particular frequency therefore it would have been obvious that the characteristic of each of the plurality of tone signals is the frequency of the each of the plurality of tone signals); and

an optical transmission unit (110, fig. 17) which transmits the plurality of tone signals together with optical signals (fig. 13 and col. 11, lines 61-67 and col. 12, lines 1-4).

Terahara discloses optical repeater system (104) comprising of optical amplifier (106) as shown in Fig. 13 and differs from the claimed invention in that Terahara does not teach the optical repeater includes:

an optical amplification unit which realizes optical amplification in each of a plurality of gain bands with a gain which is determined based on a control signal, a characteristic-signal generation unit which receives a plurality of tone signals, and generates a plurality of characteristic signals each representing a characteristic of one of the plurality of tone signals, and a gain control unit which compares each of the plurality of characteristic signals with a reference signal and generates the control signal corresponding to each of the plurality of gain bands so as to equalize the gain in the optical amplification in each of the plurality of gain bands.

However, Bode et al, in the same field of endeavor, teaches the optical repeater includes, an optical amplification unit (OA, fig. 3) which realizes optical amplification in each of a plurality of gain bands with a gain which is determined based on a control signal (output of C, fig. 3 and col. 4, lines 26-39); a characteristic-signal generation unit (TD, fig. 3) which receives a plurality of tone signals (T1, T2, and Tx, fig. 1 and 2), and generates a plurality of characteristic signals each representing a characteristic of one of the plurality of tone signals (col. 4, lines 18-25 and 48-52); and a gain control unit (C, fig. 3) which compares each of the plurality of characteristic signals with a reference

signal (col. 4, lines 48-62, obviously, a reference signal must be used to provide a difference of the power levels from the auxiliary signal), and generates the control signal (output of C, fig. 3) corresponding to each of the plurality of gain bands so as to equalize the gain in the optical amplification in each of the plurality of gain bands (col. 4, lines 48-62, gain equalization can be done by adjusting the pump power of the optical amplifier or by using a variable optical attenuator within the optical amplifier). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the optical transmission system of Terahara with an optical repeater such as the one of Bode et al in order to allow the signal travel to a longer distance and restore the signal strength to a desirable level.

6. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terahara (US Patent No. 6,271,945) in view of Bode et al (US Patent No. 6,212,001), and in further view of Onaka (US Patent No. 6,510,000).

Regarding claims 2, the combination of Terahara and Bode et al discloses all the aspects of claim 1, except fails to teach the optical amplification unit injects excitation light into the optical-fiber transmission line, which is used as an amplification medium in the optical amplification. However, Onaka teaches an optical amplification unit (EDFA1, fig. 2) injects excitation light (111-16, fig. 2) into the optical-fiber transmission line (1111, fig. 2), which is used as an amplification medium in the optical amplification. Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use an amplification unit such as the one of Onaka in the

modified optical transmission system of Terahara and Bode et al in order to provide amplification for the light transmitting in the amplification medium.

Regarding claim 5, the combination of Terahara, Bode et al and Onaka further teaches an optical amplification unit (1, fig. 4) includes more than two excitation light sources (81, 82, 85, 86, fig. 4) each of which emits excitation light having a different wavelength ( $\lambda_1, \lambda_2, \lambda_3, \lambda_4$ , fig.4), and the optical transmission system further comprises an optical multiplexing unit (24, fig. 4) which optically multiplexes the excitation light emitted by the more than two excitation light sources.

7. Claim 6 is rejected under 35 U.S.C. 103(x) as being unpatentable over Terahara (US Patent No. 6,271,945) in view of Bode et al (US Patent No. 6,212,001), and further view of Shimomura (US Pub. No. 2004/0114933).

Regarding claim 6, the combination of Terahara and Bode et al discloses all the aspects of claim 1, except fails to teach a driving control unit which activates and deactivates the optical amplification unit. However, Shimomura, teaches a driving control unit (300, fig. 1) which activates and deactivates the optical amplification unit (abstract). Therefore, it would have been obvious for one ordinary skill in the art at the time the invention was made to use a driving control unit such as the one of Shimomura in the modified optical transmission system of Terahara and Bode et al in order to provide a simple switching effect on the optical amplification unit.

***Allowable Subject Matter***

8. Claims 3, 4, 7, 9, 12, 15, 16-22, 24-30 are allowed.
9. Claim 10, 11, 13 and 14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Response to Arguments***

10. Applicant's arguments filed 25 May 2005 have been fully considered but they are not persuasive.

In the remarks applicant indicates that the prior arts, Terahara and Bode et al, do not disclose that the characteristic is the frequency or modulation depth. As discussed above, since the tone signal composed of a particular frequency, the frequency of each of the plurality of tone signals is the frequency characteristic.

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roberts (US Patent No. 5,513,029) is cited to show method and apparatus for monitoring performance of optical transmission systems.

Horiuchi et al (US Patent No. 6,160,649) is cited to show optical power measuring system.

Bai et al (US Patent No. 6,735,395) is cited to show WDM communication system.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272--3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS

August 4, 2005



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